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November 2025
volume XXXII
number 9

Greater City Aquarium Society - New York

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AQUARIUM
Series III Vol. XXXII, No. 9 November, 2025

ON THE COVER

Sometimes I come across an old photo that I think we would all like to see again. That being said, our cover photo this month features *Betta splendens* Combtail, a unique and beautiful betta whose photo originally graced these pages back in 2009, in a photograph by Al Priest. What a stunner!

In This Issue

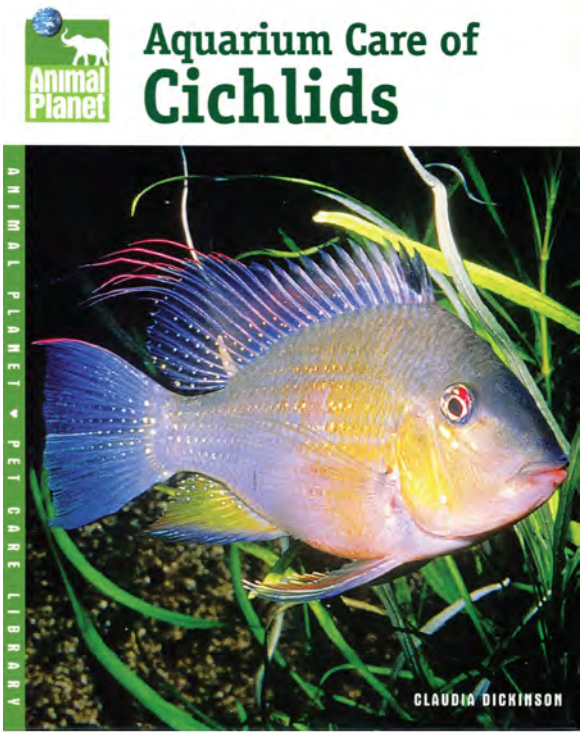
From the Editor

by Dan Radebaugh

What is the old adage, something old, something new, something borrowed, something blue? Take a look! I think this issue sort of covers all those requirements!

My special thanks go to Steve Sica, who has once more provided us with a wonderful "kickoff" article! But he's not the only veteran **Modern Aquarium** author to pitch in this month! Our cartoon caption winner this month is the redoubtable Ed Vukich! Congratulations, Ed! Well done!

"Something Old" is covered by your's truly! Please check out the MA Classics article on page 20, which reprises my own article on *Theraps wesseli* from quite a few years back. There are several articles that can lay claim to the "something borrowed" category. While I am most pleased when our wonderful members send me an article for our wonderful magazine, I am also delighted to find outstanding articles from other sources, just as many articles from **Modern Aquarium** grace the pages of other hobbyist journals! Everyone wins, and we are all able to learn more about this whole wonderful fishkeeping adventure!



by Greater City member Claudia Dickinson
(Animal Planet® Pet Care Library)
Hardcover – Also available on Amazon Kindle
https://www.amazon.com/Aquarium-Cichlids-Animal-Planet-Library/dp/0793837774

Remember, this system of sharing knowledge works best when we *all* share our knowledge. We still have another issue next month, just as we have for all the issues of **Modern Aquarium** since the first issue of this title was created and distributed by those who came before us!

Excelsior!

GCAS Meeting Schedule 2025

March 5	**Breeder Boxes**
April 2	**Natural Aquariums, Part 1**
May 7	**Natural Aquariums, Part 2**
June 4	**Guppies**
July 2	**The Balanced Aquarium**
August 6	**Night At The Auction**
September 3	**The Blue Gularis**
October 8	**Cichlids with Livebearers**
November 5	**Fishes of Uruguay**
December 3	**Holiday Awards Dinner!**

Articles submitted for consideration in ***Modern Aquarium*** (ISSN 2150-0940) must be received no later than the 10th day of the month prior to the month of publication. Please email submissions to gcas@earthlink.net, or fax to (347) 379-4984.

The Greater City Aquarium Society meets every month except January and February. Members receive notice of meetings in the mail or by email. For more information, contact: Dan Radebaugh at (718) 458-8437, email to gcas@earthlink.net, or fax to (347) 379-4984. For more information about our club or to see previous issues of **Modern Aquarium**, you can also go to our Internet Home Page at http://www.greatercity.net, http://www.greatercity.org, or http://www.greatercity.com.

GCAS Thanks You!

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BOWL SHOW RULES

There is a Bowl Show at every GCAS meeting, except our Night at the Auction/ fleamarket meeting and our Holiday Party and Awards Banquet meeting. Bowl shows are open to all members of GCAS. Rules are as follows:

- Only current GCAS members may enter fish in the Bowl Show.
- There is a limit of 2 entries per member per meeting.
- Unlike some other clubs, every month is an "open" Bowl Show at the GCAS (i.e., there is no "theme," such as that one month cichlids are judged, the next livebearers, the next anabantoids, etc.).
- Any fish that wins any prize (1st, 2nd, or 3rd) may not be entered again in the same meeting year.
- B.Y.O.B. (Bring Your Own Bowl!) Entrants are responsible for providing suitable containers and suitable water for their fish. These containers must be clear on at least three sides.
- Only one fish per container (i.e., no "pairs").
- No plants, ornaments, or equipment (filters, airstones, etc.) are allowed in the judging tank (an external mirror, or opaque cards between containers is acceptable, as is a cover that does not obstruct side viewing).
- Points are awarded: 5 points for 1st Place, 3 for 2nd Place, and 1 for 3rd Place.
- Ribbons are awarded: blue for 1st Place, red for 2nd Place, and green for 3rd Place.
- The person with the most points at the end of the meeting season receives the Walter Hubel Bowl Show Champion trophy at the Awards Banquet.
- The decision of the judge(s) is final.
- A running UNOFFICIAL total of the points awarded is printed in **Modern Aquarium**. Only the tally of points maintained by the Bowl Show Coordinator is official.

- **In case of ties**:
- 1st Tiebreaker – most 1st Places
- 2nd Tiebreaker – most 2nd Places
- 3rd Tiebreaker – most entries

PRODUCT REVIEW: BETTA LEAF

Story and Photos by Stephen Sica

A few years ago I expanded my repertoire of pet shops when we began driving out to our vacation condo in Riverhead near the North Fork of Long Island. Along the major business road is both a Petco and PetSmart.

Some older tropical fish hobbyists may appreciate that I was fortunate to be a frequent visitor to Cameo Pet Shop in Richmond Hill, Queens when I was a child and beyond. My family moved from a six floor walkup apartment in Brooklyn's Williamsburg to the "wide open" spaces of Queens when my parents purchased their house in Richmond Hill. After checking out our new neighborhood, my older brother decided that he and I should learn about tropical fish. There was a small pet shop at the intersection of Jamaica and Myrtle Avenues a block from Lefferts Boulevard. Lefferts is also 119th Street. Eventually we worked our way farther west on Jamaica Avenue to 115th Street where we discovered another pet shop, Cameo. Of course I didn't appreciate the future significance of Cameo when I was ten years old. Well, I guess that sixty years ago it had no significance.

What does any of this have to do with betta leaves? Well, I think that I saw my first betta in Cameo, or maybe it was in Kresge's on Liberty Avenue. I can't recall for sure, but I do know that I try to keep my fish happy so when I became the caretaker of a few bettas three years ago, I decided to finally learn about them. As you know, a little knowledge can be dangerous. Eventually I learned that some bettas enjoy reclining on leaves near the surface, so I began looking at betta accessories when I visited a pet store. In Petco I came across Zoo Med's Betta Bed Leaf Hammock in sizes medium and large. The large size was pricey for a simple accessory, but if you ordered the medium leaf online for pickup in the store the price was only about $2.00 at the time. I'm sure that the price has increased because what doesn't? A medium leaf was $5.24 on the store shelf. The large leaf was $5.99.

The medium leaf is more than adequate for an adult betta. This seems like a lot of money for a simple accessory since a few months earlier I had purchased this online for a low price.

Within the last month or so I started researching online vendors that sell myriad aquarium products. A company named Shein was selling a 3-pack of different color Betta Fish Leaf for $1.61 marked down from their former $1.80

price. All these artificial leaves, as well as Zoo Med's, come with plastic suction cups that last a few weeks. I replaced two with Zoo Med's magnetic Mag-Clips that I had in my spare parts box. I like this product, but it has cons too, besides being pricey. I used silicone glue and needle-nose pliers to force the nose of the leaf into the magnetic lip. I think that this item was the subject of a GCAS product review a few years ago. To follow on the Mag-Clip review, this accessory can lose much of its magnetism under certain circumstances, rendering it useless. I think the magnet's age or close proximity to other magnets such as another Mag-Clip can be harmful.

The Shein company also sells an artificial double leaf for $1.44, also marked down from $1.80. I also researched the Temu company for betta leaves and found a few distinctive styles and colors, including single and double leaves, for under $2.00. I just purchased two identical double leaves, but I have not tried either yet. By purchasing several inexpensive leaves to experiment, I now have a small collection of miscellaneous betta leaves. More stuff for the spare parts box. Are these betta leaves useful? I ultimately mounted them about one inch below the surface on two aquariums. Evaporation varies the depth somewhat. I try to keep each of my bettas in their own small tank from 2.5 to 5.5 gallons, but I did have two young females sharing a four gallon tank; each had her own leaf. I never observed either on a leaf. Sometimes the bettas would rest near the surface on a live plant.

One day I finally saw a betta resting on a leaf. Maybe the leaves did work. By the time I decided to fetch my camera to take a photo, the fish already had swum away. During the coming winter, I had several bettas. A male lives with a dozen black neon tetras in a 10 gallon tank. He will rest under the leaf or next to the suction cup, or near some floating ferns caught on the leaf, but not on the leaf itself. Sometimes he sits camouflaged under Anubis plants on the bottom. Of course my observations are limited, since I don't spend time watching the bettas and their leaves. As time went by, I did occasionally observe bettas resting or sleeping at night on leaves.

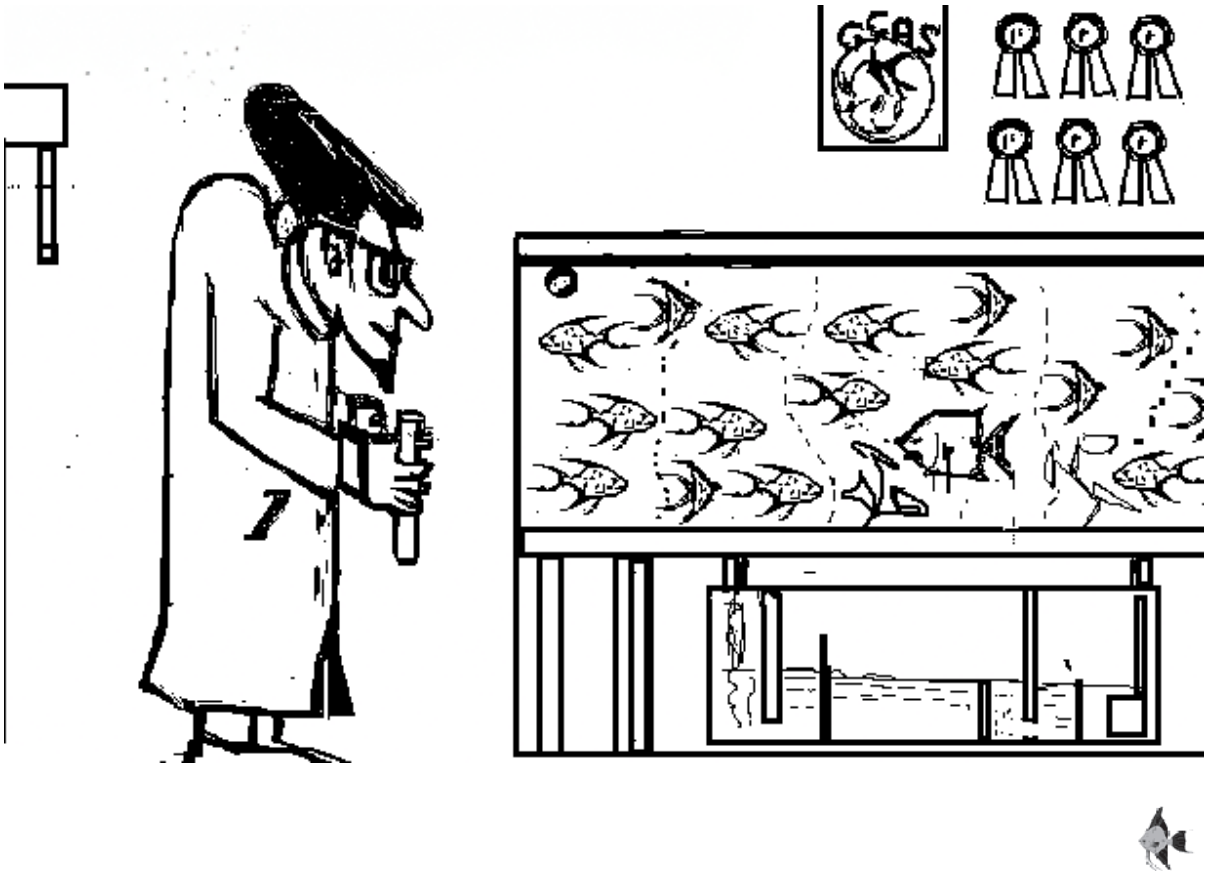
My non-scientific conclusion is that some bettas rest on leaves and some do not. I estimate that one-half of my bettas may use their leaves. I suspect each fish "discovers" its leaf sooner or later. Whether or not a fish uses its leaf is simply based upon the personality of that particular fish at the time, or maybe the fish just behaves like a fish.

As for me, I began to like the leaves when fish began to use them, so I'll probably use a leaf per fish for as long as I have a betta. I'll also give the leaves a positive review. Besides, I still have my leaf collection resting in a box down in the basement.

October's Caption Winner:

Hmmm! What fish for the bowl show?

Ed Vukich

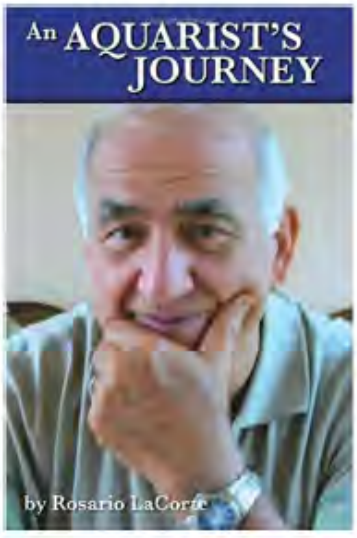


An Aquarist's Journey

Rosario La Corte is one of the world's leading authorities on breeding fish and he has written numerous articles and books, contributing greatly to our understanding of fish and their habits.

Now, for the first time, here is a compilation of his travels, adventures, successes (and, very occasional failures) all relating to collecting, keeping, and breeding fish, and in his own words (and edited by **Modern Aquarium**'s Editor, Dan Radebaugh).

Available in softcover at Amazon.com



The **Modern Aquarium** Cartoon Caption Contest

by Denver Lettman

Modern Aquarium has featured cartoons before, and like we did the last time, you, the members of Greater City, get to choose the winning caption! Just think of a good caption, then mail, email, or phone the Editor with your caption (phone: 347-866-1107, fax: 877-299-0522, email: gcas@earthlink.net. Your caption needs to reach the Editor by the third Wednesday of this month. We'll also hand out copies of this page at the meeting, which you can turn in to Marsha Radebaugh before leaving. Winning captions will earn ten points in our Author Awards program, qualifying you for participation in our special "Authors Only" raffle at our Holiday Party and Banquet. Put on your thinking caps!

Your Caption:

Your Name:

FISHES ON THE WEB: Hungry Flathead Catfish Are Changing Everything In The Susquehanna!

Flathead catfish are rapidly reshaping the Susquehanna River's ecosystem. Once introduced, these voracious predators climbed to the top of the food chain, forcing native fish like channel catfish and bass to shift diets and habitats. Using stable isotope analysis, researchers uncovered how the invaders disrupt food webs, broaden dietary overlaps, and destabilize energy flow across the river system. The findings show how a single invasive species can spark cascading ecological consequences.

https://www.sciencedaily.com/releases/2025/09/250909031516.htm

AQUATIC ART

Untitled Watercolor

by Vivian Chi

This piece origianlly nally appeared in the Januuary/Februaryl 2024 issue of the Missouri Aquarium Society's ***The Darter.***

In Defense of Frozen Bloodworms

by Clifford H. Crain, Jr.

I have come across several people on Facebook and YouTube stating that aquarists should not feed their fish frozen bloodworms (FBW). (See, for example, the youtuber identified as "The Aquarium Project NZ.") Since my fish, large and small, young and old, chow down on FBW with the greatest gusto, I decided to investigate further to see if there was any merit in what these internet experts were saying.

Although I've written about it in previous articles, let me preface this by stating once again that FBW can cause an allergic reaction. I speak from experience, as I suffered a severe reaction that scared the you-know- what out of me. Burning up, covered with rash and suddenly overwhelmed by fatigue, I crawled into bed and felt normal, if exhausted, only after a rest of eight hours. I still feed FBW, but now I always wear an arm's length heavy glove on my right hand, a standard latex glove on my left hand, a face mask and goggles.

OK, that out of the way, what are the objections to feeding FBW to your fish? I found four on the internet:

FBW contains parasites, bacteria or other undesirable organisms
FBW are coated by an indigestible "skin"
FBW are not nutritious
Frozen brine shrimp and frozen mysis shrimp are much more nutritious

Let's dispose of the parasite objection. I don't see how an animal such as a parasite would be able to survive the freezing process. Perhaps bacteria could, and none other than Rosario LaCorte, one of the most famous aquarists in America, discovered that FBW from China caused his fish to bloat and die. When he stopped using these bloodworms, the deaths stopped. I believe that the processing of FBW has improved since the days Rosario used them. The package containing Hikari FBW is labeled "Product of Indonesia," and states the contents are "highly purified" and "Free from harmful parasites, unwanted bacteria & foul odor." I have no reason to doubt that Hikari is ensuring that its FBW will not cause your fish to die. FBW have never caused bloat in my fish.

As far as the claim that FBW are coated by an indigestible "skin," I don't know how to test this claim, but some very nutritious foods, such as daphnia, contain indigestible material. The claim that FBW are not nutritious is false. It seems that what everyone is defining as "nutrition" is the protein content. Protein is of course extremely important in food, but it's not the only important ingredient. In fact, fish that have evolved to consume a vegetable diet can actually die from eating foods containing too much protein. For the sake of argument, I'll assume that the protein content is the defining characteristic of "nutritious."

I compared the protein in FBW to three very high quality pellet foods. But wait, the haters say, look at the nutrition label on a Hikari FBW package. It says protein is a minimum of only 3.5% and moisture is a maxi-mum of 95%. Protein in a quality pellet food averages about 40%. Because FBW by nature contains a lot of frozen water that melts away and is not consumed, a realistic comparison of the protein percentage stated on the labels is not valid. Freeze-dried bloodworms are 53% protein. There's no reason to think that, bloodworm to bloodworm, FBW have less protein than freeze-dried bloodworms.

This article originally appeared in the March, 2025 issue of Central New York Aquarium Society's ***The Reflector***

An advantage that frozen fish foods have over pellet foods is the lack of added ingredients that are not found in nature. FBW is just bloodworms plus a small amount of added vitamins. Even the best pellet foods have some grain in their composition. Grain performs the function of a binder, holding the pellet together, but has no nutritional value to a fish.

Finally, the claim that FBW is greatly inferior to frozen brine shrimp and frozen mysis shrimp is just wrong. The chart below shows that FBW has only slightly less protein than the other frozen fish foods.

My conclusion? For my fish that don't require a vegetable diet, I will continue to feed high quality flake and pellets twice daily and frozen foods once daily. I rotate the frozen foods as follows: FBW followed the next day by spirulina brine shrimp, followed by mysis shrimp, followed by brine shrimp, and then start the cycle over. BTW, the food my fish consider their favorite non-live food, no contest, is FBW!

Food	Protein %	Moisture %
Hikari frozen bloodworms	3.5%	95%
Freeze-dried bloodworms	53.0%	10%
Northfin Cichlid Formula pellets	42.0%	9%
Xtreme Cichlid Peewee pellets	38.0%	12%
New Life Spectrum Cichlid pellets	37.0%	10%
Hikari frozen brine shrimp	4.0%	92%
Hikari frozen spirulina brine shrimp	4.0%	95%
Hikari frozen mysis shrimp	4.2%	97%

Blind Cavefish Have Extraordinary Taste Buds

by Angela Koenig, University of Cincinnati

Image: Kazakov Maksim/Shutterstock.com

Over thousands of years, cavefish evolved and lost their vision, earning the moniker "the blind cavefish," but some cavefish also developed an inordinate number of taste buds on the head and chin.

In a new study, now published in the journal **Communications Biology**, scientists at the University of Cincinnati have determined when the taste buds start to appear in areas beyond the oral cavity. The study was supported by the National Science Foundation.

To begin, blind cavefish evolved in cave ponds in northeastern Mexico. They are pale pink, and nearly translucent compared to their silvery counterparts that live in surface rivers and streams. While cavefish have the faintest outline of eye sockets, the surface fish have enormous round eyes that give them a perpetually surprised expression.

Despite the many obvious physical differences, the two fish are considered the same species. "Regression, such as the loss of eyesight and pigmentation, is a well-studied phenomenon, but the biological bases of constructive features are less well understood," says the article's senior author UC professor and biologist Joshua Gross, whose laboratory is dedicated to the study of evolution and development of cave-dwelling vertebrates.

"Knowing just how many doors this opened for future research involving taste bud and taste development was a truly rewarding aspect of this research; especially considering how long these fish live," says co-author Daniel Berning, who earned his master's degree in biology at UC in 2022, while working on the study in Dr. Gross' lab.

Although scientists in the 1960s discovered that certain populations of blind cavefish had extra taste buds — on the head and chin — there was no further study of the developmental or genetic processes that explain this unusual trait, says Gross.

To determine when the extra taste buds appear, Gross and his research team looked at the species *Astyanax mexicanus*, including two separate cavefish populations that dwell in the Pachón and Tinaja caves in northwestern Mexico, known to have the additional taste buds.

The research team found that the number of taste buds is similar to the surface fish from birth through 5 months of age. The taste buds then start to increase in number and appear on the head and chin in smatterings, well into adulthood, at approximately 18 months.

Cavefish can live much longer than 18 months in nature and captivity, and the authors suspect even more taste buds continually accumulate as the fish get older.

The increase correlates with the time that the cavefish stop eating other live foods for sustenance and start to pursue other food sources, Gross says, such as bat guano. Equally fascinating, he says, is that the expansion may occur in other cave locations where there are no bat populations.

With more taste buds, he says, the cavefish have a keener sense of taste, "which is likely an adaptive trait."

"It remains unclear what is the precise functional and adaptive relevance of this augmented taste system," says Gross, which has led the team to begin new studies that focus on taste, by exposing the fish to different flavors such as sour, sweet and bitter.

Under The Covers

by Timothy J Brady

This month we look at a small livebearer, *Heterandria formosa* is called the least killifish as it is considered the smallest livebearer. However this fish, *Neoheterandria elegans*, is as small or slightly smaller. There are a lot of similarities between the two fish as you might expect beginf from the same order and family. The non-scientific name or nickname for this fish is the Tiger Teddy.

Introduction

Although not a common fish in the hobby, this fish is undergoing an increase in demand because its diminutive size makes it a good choice for Nano aquariums, tiny desktop aquarium ecosystems. The common name of this fish (Tiger Teddy) is an apt description of eight or nine tiger-like stripes present of the fish. The overall base color is tan to olive with a nice gold spot on the center of the flank.

These attractive and graceful fish are elongated and have a slender body with an elongated head. The ground color is olive brown, the belly grayish-white. Six to nine vertical strips of various densities mark the flanks, becoming especially pronounced and spot-like in the anal area. The surrounding area is yellow-orange. The yellowish dorsal and anal fins are edged in dark blue. Some specimens may have dark dorsal and anal fins with blue edging. The sexes are alike in coloration.

Etymology

Neoheterandria: from the ancient Greek (neo-) meaning 'new, young', (heteros) meaning 'other, another, different' and (andros), meaning 'male', elegans: from the Latin elegans, meaning 'fine, elegant, handsome'.

Meaning of Name
Genus — Neoheterandria = New Heterandria
Species — elegans = Elegant
Common Name: Tiger Teddy
Synonyms: None

Classification
Order: Cyprinodontiformes
Family: Poeciliidae

Neo heterandria elegans HENN, 1916
Tiger Teddy

Type Locality/Distribution

Endemic to the Rio Atrato drainage in Choco and Antioquia departments, northwestern Colombia, where the full extent of its range is somewhat unclear. *Netoheterndria elegans* is not widely distributed. It is believed that this fish is only found in the Rio Truandro, a tributary of the Rio Atrato in Colombia.

This article originally appeared in the May, 2023 Issue of the Aquarium Club of Lancaster County's publication, Tank Tales.Rio Trunando in Colombia, where it lives in the most varied waters with water temperatures that can reach almost 30º C.

Max Standard Length 20-25mm.

Size, Maturity, and Sexual Dimorphism
Size: Males .75 inch, Females 1 inch
Maturity: .5 inch Sexual Dimorphism: Males are much smaller than females and less round. Males have a gonopodium.

This articled previously appeared in the May, 2023 issue of the Aquarium Club of Lancaster County's publication, ***Tank Tales.***

Care:

Tiger Teddies aren't difficult to keep, but they do not tolerate poor water quality. A 25% weekly water change is recommended. A big tanks is not necessary — a five or ten gallon tank provides an ample amount of room for three or four pairs and a bunch of babies.

Furnish the tank with an abundance of live or plastic plants. A gently bubbling sponge filter is a good choice for filtration as these little fish (and especially their fry) are not very strong swimmers. I've heard conflicting reporst about water parameters for these fish. I had success with neutral water with only minimal hardness, but others have reported that these fish tolerate hard water.

Aquarium Size:

A pair can be maintained in an aquarium with base dimensions of 30 X 20 cm, but larger quarters are needed for a group. It is advised to find a filter that has a water flow between 4-5 times the volume of your aquarium. Other aquarium filters that have been recommended highly by customers in your area can be found here.

Maintenance:

A gently filtered, heavily planted setup is recommended, and exceptionally clean water is a prerequisite — meaning weekly water changes of around 50% are required.

Water Conditions:

Temperature: 24 - 30º C, although values toward the upper extremes of this range should not be maintained for extended periods of time.

pH:

7.0 - 8.0

Hardness:

90 - 447 ppm; unlike many poeciliads this species will tolerate softer water.

Diet:

The primary issue is that the fry are only 2-3 mm. long, and cannotg eat microworms, freshly hatched Artemia and suchlike for the first few days. They initially require infusoria-type foods, but grow fairly quickly and are able to reproduce at an age as little as three months.

Unfussy and omnivorous, it will accepst most foods offered. Being a micro predator, it's particularly of small live or frozen varieties such as Artemia or Daphnia, although crushed dry foods are also accepted. If the aquarium contains plenty of fine-leaved plants, sufficient micro-organisms for the young should be available.

Provide a meat-based diet of finely crushed quality flakes, baby brine shrimp and microworms. It is believed that having a live food supplementing flake is essential for this fish.

This species is highly adaptable in the

aquarium, and even likes small tanks, which should be well planted, with water slightly in motion, and a temperature of 24 to 28º C. The diet should be chiefly the smallest live foods, but also some vegetable base flake foods. A dense growth of fine-leafed aquatic plants proviedes plankton (infusoria). One or two are born at intervals of two to four days, as with *Heterandria Formosa*. Well fed adults will not chase the young.

Behavior and Compatibility:

Unsuitable for the general community aquarium due to its diminutive size, these fish are at their best when kept with their own kind, though they can be recommended for living in a community with similar delicate species. Females are sometimes aggressive, and this can cause casualties, but such behavior can be reduced by maintaining a heavily planted setup as mentioned above.

Reproduction/Breeding

Tiger Teddies breed like other Poeciliads, with the male giving chase to the female, using his gonopodium to transfer sperm packets. The males are determined, and may spend a lot of time.

The gestation period is around 30 days. This species has a slightly different method to most other livebearers, involving a process known as superfoetation. This is defined as "formation or development of a second foetus when one is already present in the uterus". Fry at the different stages of development can therefor be present at any given time. In addition, the egg yolks of the species are nutritionally poor, and the developing fry deruve much of their nourishment via organs that function in a similar way to the placenta of mammals. As the result of this process, fry are dropped continually rather than in defined broods. You'll see a few fry appearing every day or two for about a week. If well-fed, the adults will usually not harm them.

References

Atlas of Livebearers of the World.
Lothar Wischnatch PP 136-137

https://chicagolivebearer.com/index.php/livebearer-profiles/45-neoheterandiaelegans

htttps://www.seriouslyfish.com/species/neoeterandria-elegans/

https://www.chicagolivebearer.com/index/php/livebearer-profiles/45-neoheterandiaelegans

Keeping and Breeding *Theraps wesseli*

by Dan Radebaugh

This article originally appeared in the October, 2012 issue of ***Modern Aquarium****.*

Named in honor of Rusty Wessel, who discovered them back in 1991, *Theraps wesseli* is a medium sized cichlid, native to the Rio Papaloteca basin of northern Honduras. Rusty describes[1] their habitat as being pristine mountain streams, with clear, "*fast-moving water with a current of approximately three feet per second, a pH of 7.8 and a water temperature of approximately 25°C (77°F). Surprisingly, the water is relatively soft. The bottom consists of sand, rocky rubble and large boulders with a maximum depth of only 2.4-3.0 m (8 to 10 feet). The banks are lined by a lush green vegetation. Many consider this the area one of the most beautiful in all of Honduras*."

When Rusty came and spoke to us here at Greater City a couple of years ago, he brought a couple of bags of these fish with him, and I bought one of them at that night's auction. The bag contained six or seven fry of approximately 1.5 inches. After quarantine, I put them in a minimally planted 40-long aquarium which at the time was housing a couple of male dwarf pike cichlids, their mates having died of some peculiar disease for which I was unable to find a cure. I added some additional cover and hiding places, and everyone seemed to settle in nicely, the only other occupants being some snails and a small pleco, purchased as *Ancistrus* Sp. LDA 003, but I'm less than confident of that identification. The tank is on the lower level of a metal stand that also supports a 75-gallon on the top level. I've found that very often fish behave nervously in a lower-level position; possibly their "wading bird" alarms go off as we approach the tank, and they dive for cover. These fish showed some of that behavior, though not excessively, and they didn't act as though they felt crowded, so that's where they've remained, though with mixed results, as you will see. By the way, within a month there were no more living snails in the tank, so if you have a tank full of unwanted snails…

One of my favorite sources for cichlid profiles is Cichlid-Forum.com, so I went there to see what I'd gotten myself into. As a bonus, along with the standard profile is a brief article by Rusty Wessel, from which I quoted above. The profile itself states that the fish is mildly aggressive, an omnivore with a maximum size of eight inches, prefers water temperature of 76-80°, pH 7.6, with neutral hardness. Under gender differences, they state that the fish is monomorphic. While my experience with these fish is limited, I would have to disagree about the monomorphism. While as youngsters they all look pretty much alike (they attain their adult coloration by about one inch), my observation has been that the 8-inch length quoted above is only attained by the males, the females reaching only about 75% of males' size. The male body shape differs slightly from that of the female, as well. Of course my sample size is so far only seven adult fish.

Temperament: mildly aggressive? This gets a little interesting. When I put them in the 40-long (a four-foot tank), they seemed to like the hiding places, but freely cruised around in the open as well. I have never witnessed an overt act of aggression by these fish. Nevertheless, within a few days I found one of the dwarf pikes dead; the other followed within another two weeks. Then everything was fine for over a year. They clearly didn't like the pleco much, but couldn't do anything about him, as he seemed unimpressed by their ill will.

As they all continued to grow, a few became noticeably larger and longer-bodied than the rest. These seemed to rate some social deference from the others, with the largest fish receiving the most deference. Then one day I noticed that one of the smaller fish had taken on the classic female spawning colors—a startlingly beautiful black, white, and gray, while the larger four fish took on a darker gray base coloration, with more intense coloration in general.

The other two (smaller) individuals did not change from their normal coloration. I assumed these two to be females, and I still believe this to be so.

After returning from work one afternoon, while doing the evening feeding I discovered that in this tank a massacre had occurred. Three of the four males were dead, in addition to one of the females—all showing physical injuries. After removing the victims, I put the remaining normally colored female in another tank containing two severums and a uaru. Taking this outbreak of violence as a sign of impending spawning, I waited a week or so, but nothing further happened, so I decided to try to move things along. The pH of the water from my faucets is typically neutral; that in my tanks usually is 6.6 to 6.8. I added some crushed coral to the media trays in my (Penguin) HOB filter, which pushed the pH up to about 7.3. I also remembered reading somewhere that with these fish, refilling with slightly warmer water during water changes will sometimes trigger spawning, so I did that with the next couple of water changes.

I observed no spawning activity, but noticed that each fish had chosen a cave, and was mostly staying in it or by it except at feeding time. Then one afternoon at feeding time I saw the female herding some fry around the mouth of her cave. They seemed to me to be few in number, but unusually large—certainly larger than newly free-swimming severum, chocolate cichlid, or *H. carpintis* fry. But small in number. They stayed in or near the cave for several days before beginning to explore the tank, escorted by the female. The male stayed in or near his own cave. As time passed and the fry grew, so, mysteriously, did their numbers. It seemed that every day there were more, until they were seemingly everywhere. The female did all the escort duty; the male stayed as well out of the way

as he could. I don't know, but I wonder if he wasn't looking after some of the wrigglers (maybe even some of the eggs) while holed up in his cave.

T. wesseli, as I mentioned at the beginning of this article, is native to fast-moving, clear mountain streams. They appreciate water movement, and the fry, even while very small, take turbulent water very much in stride. Having more than once retrieved fry from the interior of canister filters, for the first few weeks after their appearance I put a home-made "pre-filter" over the Penguin's intake. After observing how these fry handled water changes (I refill using a hose), I'm not certain that precaution was necessary, though I'll probably do so again should the occasion arise. Better safe than sorry.

In addition to whatever infusoria they gleaned from the planted tank, I started them off on finely powdered food like Cyclop-Eeze® (and others), graduating them to larger bite sizes as they grew. They are not fussy eaters. In general, *T. wesseli* seems to be more attracted to sinking food than to floating, though this could be partly due to habituation; the fry will go for the floating food, but the parents continued to prefer it to sink. The fish I got from Rusty may well have been exposed mostly to sinking food, and have continued to prefer that. We'll see how these little ones' preferences develop as they grow.

Sadly, though I still have not actually witnessed overt aggression from these fish, I awoke a couple of weeks ago to find the female badly beaten and dead. This of course was very frustrating. Perhaps results would have been different in a larger tank, but how much larger would be necessary? It's hard to imagine a that a 55-gallon tank, or even a 75, would make much of a difference, as the tank length is the same. I recommend using a divider, if not a six-foot tank, until we have more accounts of successful (and unsuccessful) spawning methods and results. These are beautiful and interesting fish, and they don't appear to have a large native range, so the more knowledge we have of their spawning and other social behavior, the better.

The female that I put in the 75-gallon tank got along fine with her larger South American tankmates until I sold her at a Greater City auction a couple of months ago. I still have the male and a large number of fry, and I'll have to start finding homes for the kiddies soon. The male still avoids much contact with the fry, but he is very careful not to eat or hurt them during feeding time.

Photos by Marsha Radebaugh

[1] http://www.cichlid-forum.com/articles/theraps_wesseli.php

2024 NEC Article Competition Results

The following aquarium clubs supplied articles this year:

Aquarium Club of Lancaster County (Tank Tails)
Central New York Aquarium Society (Reflector)
Greater City Aquarium Society (Modern Aquarium)
Koi International Organizational (KOI)
Tropical Fish Club of Burlington (In Depth)

All issues submitted were viewed and approximately fifty articles were selected for the competition and then printed. Each of these articles were then read and assigned a numeric grade from zero to ten. The top three articles were then assigned as class winers. In case of tie scores, the articles were then re-read and re-scored.

OPEN Category

First Place	A Life With Fish - Flying Solo by Jason Gold	GCAS
Second Place	Immersed In Emersed Culture by Michael Buchma	ACLC
Third Place	Keeping Up With The Jonesi's by Joel Antkowiak	ACLC

BREEDING Category

First Place	Raising Our Fry by David Banks	TFCB
Second Place	*Aspidora spilotus* by Kerry Tolva	ACLC
Third Place	Breeding and Raising German Blue Rams by Kerry Tolva	ACLC

HUMOR Category

First Place	A Deep Dive Into Brooklyn's Shallowest Goldfish Habitat by Thomas Warns	GCAS
Second Place	Cartoon Caption Contest by Anonymous	GCAS
Third Place	None	

Continuing Column Category

First Place - Undergravel Reporter by Anonymous GCAS

Second Place - Exchange Report by Clifford H. Crain Jr. CNYAS

Third Place - Wet Leaves by Susan Priest, Horst Gerber GCAS

Junior Class Category

No Articles Identified

Honorable Mention Category

"What To Do When the Unexpected Happens"
or
Documenting Your Pond by Sue Kingston, C.K.K

A 20 page 15 chapter eBook published by Koi Organization International
This eBook focuses on Koi fish that live in an an outdoor pond environment. Many of the aspects of successful Koi keeping in this environment are also applicable to non Koi fish and a non outdoor pond environment (think aquarium). The eBook is a worthy read to glean those aspects that apply to your environment.

GCAS Happenings

October Updates

Welcome to new GCAS membber Luis Cardenas, and to renewing members Steve Chen, Paul Jin, and Christos Tsavtarides!

October Bowl Show Winners:

1st Place John Buzzetti
2nd Place Richie Waizmann
3rd Place Harry Faustmann

Unofficial 2025 Bowl Show totals to date:

John Buzzetti	10	Mark Soberman	5	Harry Faustmann	14
Joseph Ferdenzi	19	Richie Waizmann	24		

Here are some aquarium societies in the Metropolitan New York area:

GREATER CITY AQUARIUM SOCIETY
Next Meeting: November 5, 2025
Speaker Subject: Matias Garcia

GCAS Usually Meets the first Wednesday of the month at 7:30pm, at the Alley Pond Environmental Center 22465 76th Ave, Oakland Gardens, NY 11364
Contact: Joseph Ferdenzi (516) 484-0944
E-mail: GCAS@Earthlink.net
Website: http://www.greatercity.net

BROOKLYN AQUARIUM SOCIETY
Meets the 2nd Friday of the month (except July and August) at 7:30pm: New York Aquarium - Education Hall, Brooklyn, NY 11229
Call: BAS Events Hotline: (718) 837-4455
Website: http://www.brooklynaquariumsociety.org

LONG ISLAND AQUARIUM SOCIETY
Meets: 2nd Fridays (except July and August) 8:00pm. Meetings are held at AMVETS Post 48, 660 Hawkins Avenue, Ronkoncoma, NY 11779
Website: https://ncasweb.thechinesequest.com/

NASSAU COUNTY AQUARIUM SOCIETY
Meets: 2nd Tuesday of the month (except July and August) at 7:30 PM. Meetings are held at:
Molloy Univerrsity - 1000 Hempstead Ave, Rockville Center, NY, Barbara H. Hagan Center for Nursing, Room 239
Contact: Mike Foran (516) 798-6766
Website: https://www.nassaucountyaquariumsociety.org/

The Confusing Chameleon Fish

Badis spp.

PHOTO: Aquarium Glaser

by Mike Hellweg, CFN

Updated from the Sept. 1993 article

This article originally is updated from the September, 1993 issue of ***The Darter****.*

One of the most popular of the little "Oddballs" seen frequently in the hobby is the Chameleon Fish, Badis badis. It's subfamily Badidae was elevated to full family status and is a tiny member of the very large Perch family. The Badids are distant cousins to the Cichlids, the Anabantoids, the Darters and the Leaf Fishes. With this diverse group of cousins, you can see that it might be a subject of some confusion. Add to that the fact that what we hobbyists knew as Badis badis turned out to be a closely related group of species, not to mention varying trade names, and you have what can only be referred to as a confusing mess! This has been cleared up quite a bit over the past quarter century, with the single species now becoming a genus with 28 species! Finally, when you add in the instantaneous silliness that is the Internet, where anyone can say anything and come off as an expert if they yell the loudest in a chat room or have a flashy website, you can see why even the real experts are confused.

I'm going to try to clear up some of the mess, at least from a hobbyist's perspective. In no way is this meant to be a scientific analysis of the family Badidae. I'll leave that to someone who has access to all of the type material and scientific literature. I just want people to have a chance to learn more about this amazing group of fish. The classifications that I will use are based on Eschmeyer's Catalog of Fishes, published by the California Academy of Sciences, which is the most complete and up-to-date reference on fish classification.

RIGHT: a visual history of Badis taxonomy

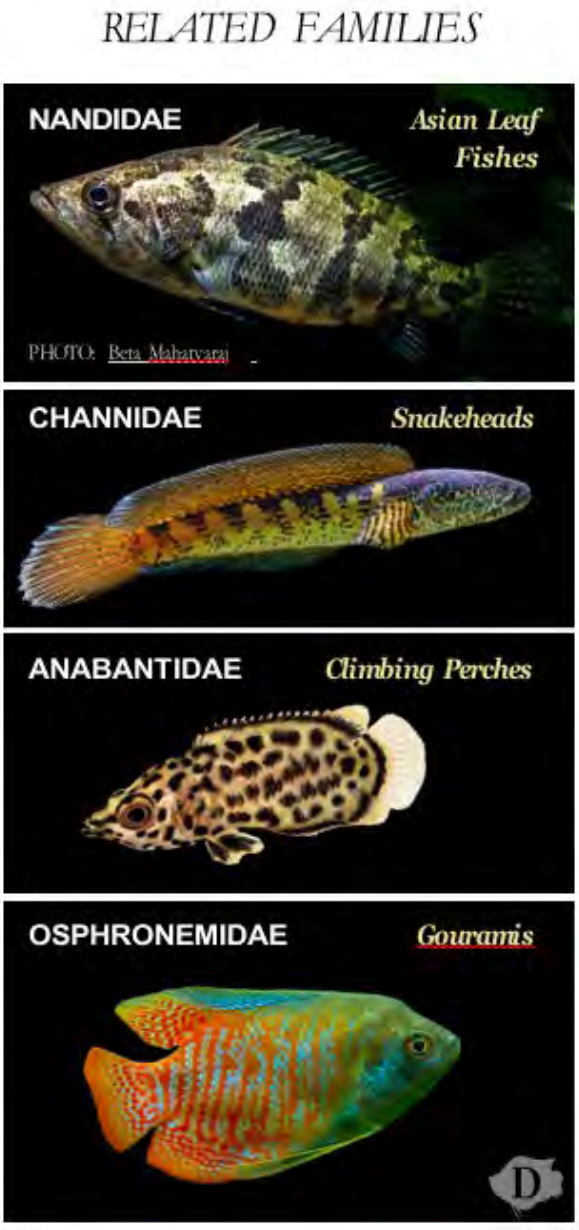
First, I think it's important to talk a little about the background of the fish in question. Then I'll talk in general about characteristics of the fish, and their care and breeding. Later on in the article, I'll get to the individual descriptions that can maybe help clear up some of the mess.

The genus of fish we know as *Badis* were first introduced to science by the famed biologist Hamilton-Buchanan way back in 1822. *Badis* is a native Indian name for the fish. At that time, he described them as *Labrus badis*. At the time, *Labrus* was a worldwide catch-all genus of both freshwater

and marine fish that included many fish we know now as Gouramis, Badids, Cichlids and Wrasses. It remains a genus of Wrasses to this day, but as science expanded, the others were moved to different families and genera. As more was learned, Bleeker moved them from *Labrus* and erected the genus *Badis*, where they remain to this day. He also put this genus into the family Nandidae, which is made up of the fish we know as "Leaf Fish". They do bear some resemblance to the Nandid genus *Pristolepis* in both their appearance and behavior. But appearances can be deceiving, and sometime in the late 20th century, they were moved into their own family, Badidae. This is not too confusing a nomenclatural history as fishes go - just look at the Cichlids to see real confusion! However, 180 years and several dozen exporters later, much confusion has crept in to this tiny group of fish.

Chameleon Fish have been a popular fish in the hobby since just after the turn of the last century. They are peaceful with other fishes, are colorful, and stay small. About 80 years ago, a German hobbyist named Johann Paul Arnold reported the first captive spawning. Although not prolific, hobbyists were able to get them to spawn in captivity, which added to their popularity. They also prospered in the smallish, unheated tanks of the day on the wild-collected live foods that were available to most hobbyists. Don't forget Brine Shrimp have only been widely available for about 60 years!

The Badidae are all small fish that come to us from Southeast Asia, from the Ganges River in Northern India to the Mekong Basin in Laos. They are found in small, slow flowing streams, roadside irrigation ditches, and along the shores of small pools and lakes. The base coloration allows them to blend in with the background, and even in a well-planted tank they are often hard to see. Like the proverbial Chameleon, they can change colors in the wink of an eye. The almost instantaneous color change is not so much to allow the fish to blend in with their surroundings, but as an external reflection of the mood of the individual fish to other fish.



The base coloration of most varieties is a dirty yellow brown to silver interspersed with several irregular darker bars, usually brown in color. The coloration even extends into the unpaired fins of the males, where it is often interspersed or replaced with blue or blue-green. This can sometimes become a florescent royal blue, and sometimes even appears to be almost red. They can even assume an overall chocolate brown color, or fade to pale yellow-beige with nearly clear fins. You can see why famed aquarium pioneer William Innes gave them the name of Chameleon Fish, especially when you see all of these colors on the same fish within a few minutes time!

Generally, males are nearly twice the adult size of females. They have larger fins, more intense colors, and a concave belly that even in healthy well-fed specimens makes them look half starved. Females usually do not show any of the intense coloration, being more of a washed out beige to silver color with clear fins, depending on the subspecies. Females also do not show the range of expression in coloration, generally being limited to darker or lighter versions of their base color. In addition, the males are often surprisingly aggressive for fish of their size, especially males of the tiny Scarlet Badis. They do not generally direct this aggression at other species, but they have been known to kill other *Badis*, especially other males in the same tank.

As they occur over such a large range in the wild, they are adaptive to most water conditions that a hobbyist may throw at them. Some authors suggest that soft acid water would be best, but I have had them not only live, but also spawn successfully, in rock-hard water at a pH of 8.0! I have also had luck with specimens kept in softer water with a pH of 6.5. Generally, they can be kept in your tap water without problems.

Chameleon Fish Care

I would suggest that all novice fish keepers and even most advanced hobbyists stay away from playing with water parameters unless they are trying to breed a specific fish. I am not a chemist. Neither are 99.9% of the other hobbyists out there, yet many of them regularly play with water parameters that they can't even begin to understand, all to the detriment of the fish. In the wild, freshwater fish are subject to a constantly changing environment. Dry season water can be extremely warm and heavily polluted by decaying vegetation and even dead fish and other animals. It can be extremely hard or soft depending on the surrounding landscape, and nearly devoid of oxygen. Rainy season water, which often comes upon the fish suddenly, can be just the opposite of what they have been surviving in throughout the dry season. The temperature, pH and hardness can change radically in just a few minutes time. While this sudden change may stress the fish temporarily, it does not normally kill them. In fact, it is often the signal for them to spawn!

India's monsoon season exposes fish to dramatic changes in temp, pH, and hardness.

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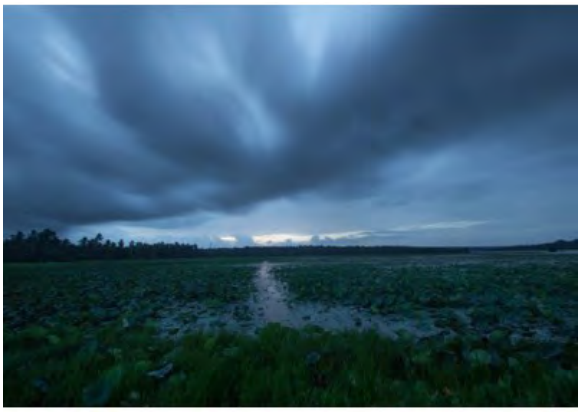

Instead of giving you specific water parameters for the Chameleon Fish, I think a general guideline as to water qauality is more important to working successfully with these fish. To be seen at their best, they really should be kept in a small group of 6-8 fish in a single species tank of 10 to 20 gallons in size. They need clean, well-oxygenated water and a well-planted tank. Use a quality filter, and maintain it regularly. Just remember that *Badis* don't like the water to be flowing too heavily. Keep the nitrates below 10-15 PPM by doing large, regular water changes, and pH and hardness won't really mattger. Give your *Badis* a choice of places to hide, and they will spend more time in the open. I always use some floating plants, to cut down on the light and provide them with a sense of security. In addition, I provide caves of some sort so that every fish has at least one place to hide. *Badis* do not share their hiding place, unless it's the only one in the tank. At that point they would be so stressed to show any normal or behavior or coloration anyway.

Much has been written about the diet of the Chameleon Fish. They do prefer living food, and will gladly consume blackworms, whiteworms, Grindal worms, microworms, young red worms, live brine shrimp, *Daphnea*, and other small living foods. They will also occasionally eat small pellet and finely crusched flake foods, as well as frozen and freeze-dried foods. The key is to get them to accept the prepared foods is that it needs to be small enough to fit in their mouth AND in motion. Once it is lying on the bottom, most (but not all) *Badis* will ignore it. The key to success is to stick to live foods. Some specimens will accept processed foods, and some will starve to death literally surrounded by what we think of as food.

Badis Breeding

The biggest barrier to spawning the Chameleon Fish is that most imported stocks are composed entirely of males! This is not necessarily an attempt to "rip off" the hobbyist, but rather is due to the fact that the collectors only collect the largest, most colorful fish. That is what brings them the most money. Money is what they need to support their families. However, some exporters are now starting to understand that many of the end customers want both the colorful AND the plain fish – and they can make more money for pairs of fish. Hopefully this trend will continue to catch on.

Most healthy adult Badis, given a partner of the opposite sex and a quiet, secluded location, will at least try to mate. The eggs

are adhesive, and are surprisingly large for such a small fish, especially for the Scarlet Badis, where the egg plaque can be larger than the female!

Like the dwarf cichlids (above), most Badis are cave spawners, placing their eggs on the walls or ceiling of underwater caves

Most healthy adult *Badis*, given a partner of the opposite sex and a quiet, secluded location, will at least try to mate. The eggs are adhesive, and are surprisingly large for such a small fish, especially for the Scarlet Badis, where the egg plaque can be larger than the female! Most varieties will spawn in a cave or under a decoration. The Scarlet Badis seems to prefer spawning under the leaves of floating plants near the surface. All varieties I have seen spawn so far spawn in a similar fashion to the Anabantoids, with the male embracing the female. Instead of releasing the eggs and the male spitting them into a nest as the Anabantoids generally do, the *Badis* female places the eggs onto the sides, bottom, and even the roof of the spawning cave, as would a female Dwarf Cichlid. When spawning is finished, just like in most nest building Anabantids, the male drives off the female and guards the eggs. The first clue that they have spawned is often that the male does not show up at feeding time for up to a week, then just as suddenly he reappears. At that point, if you look among the roots of plants and at the base of rocks and other decorations, you will see the ¼" long fry. They spend most of their first several weeks hiding among the decorations near the bottom of the tank. They scatter when they leave the male's care and he shows no interest in them from that point on. If the tank is well planted and does not contain larger fish other than the adults, you can raise the fry with the adults. They consume the same foods as the adults, with a definite preference for moving food, and really enjoy baby brine shrimp!

Badis badis

Common *Badis* in the Hobby

Now let's take a brief look at the most commonly encountered species of *Badis*. As I predicted when originally working on this article, this nomenclature has changed immensely since the original publication. All of these are now considered full species, and some have even been moved into a new genus, *Dario*!

The original and still most popular member of the group is *Badis badis*, the Blue Chameleon Fish. It comes to us from Northern India in the Ganges River basin. As the common name implies, males exhibit primarily bright Royal Blue in their unpaired fins. The body is generally covered with deep chocolate brown bars that often expand so that the entire body appears to be chocolate. Females have tan to beige colored bars with a muddy yellow base color. Their fins are generally clear. Males generally reach about two inches, with females reaching about 1-1/2".

The next most common variety is *Badis ruber**, the Rusty Chameleon Fish. It comes to us from Lake Inle in Burma. This is the subspecies that was first spawned in the hobby by J.P. Arnold in 1920. Males generally have a rusty orange color on the boday, where the Blue variety is chocolate brown, with rusty orange and blue-green bands in the unpaired fins. Females are a plain gray to muddy brown color. This variety too, generally reaches about 2" in males, with females generally reaching about 1-1/2".

**often still sold by online vendors as Badis bumanicus.*

Still sometimes sold as *Badis benegalensis,* the fish is now known as *Dario dario*.

Rarely seen in the hobby, but still available from time to time is the Assam Badis, Badis assamensis. As the name implies, it comes to us from Assam state in North Eastern India. This is the largest member of the group that I've seen, with males reaching 3". I have never seen a female. All groupls imported so far seem to be males. They are an overall orange-brown to rusty orange color, with metallic blue scales interspersed on the body instead of bars. The unpaired fins are brownich to orange, with a dark band around the edge. Full colored mailes in breeding colors are almost black with silver spangles. Like their distant leaf fish cousins, these guys are not above eating small fish, so choose their tankmates carefully.

The most recent species, *Badis limaakum*i, was described less than two years ago, so it would be wise to expect more to come. Whatever happens scientifically, know that The Chameleon Fish, whatever species that you have, is a wonderful fish with very interesting behavior that will challenge any hobbyist, novice or advanced. Any hobbyist willing to give them what they need to survive – clean water, hiding spaces, and good food can enjoy *Badis*. As always, don't forget to just sit and watch your fish. After all, isn't that why we all got into this wonderful hobby in the first place?

Greater City Aquarium Society

Breeders Award Program Results for 2025

Jason Kerner	***Corydoras aneus* Albino**	**20 Points**
Harry Faustmann	***Fundulopanchax sjostedti***	**15**
Jules Birnbaum	***Lamprologus caudofunctatus***	**10**
	Limia nigerafaciata	**10**
	***Julidochromis ornatus* - golden**	**10**
	***Lamprologus ocellatus* - blue**	**15**
	***Lamprologus ornatiannis* - Kigoma**	**15**
	***Neolamprologus marunguensis* - Kampaura**	**15**
		75 Total
Jeffrey Bolbach	***Melanotaenia spukali*-Tawa**	**15**
	Melanotaenia laticlavia	**15**
	Oryzias latipes	**5**
		35 Total
Edward Vukich	***Lamprologus ornatipinnis***	**15**
	Xiphophorus helleri	**5**
		20 Total

Consider Madtom Catfish

by Robin Engelking

The tadpole madtom is usually found in streams and riffles, but can occasionally be found at the margins of lakes. They are often found among stones in rocky streams. They can also be found under branches, leaf detritus or even in old cans. The best way to collect madtoms is with a seining net or a kick net and if you're really lucky you might find them in an old can or bottle. If you net something that reminds you of a small bullhead, you might have a tadpole madtom. They have smooth, scaleless skin that is yellow brown to brown on the dorsal surface with a cream or white belly. There are four pairs of prominent barbels framing a wide thick-lipped mouth. The head is broad and flat with very small eyes, and in a healthy fish the barbels are held pointed forward forming a "cup". You can usually locate your fish's lair by looking for the tips of the barbels sticking out. This is how the fish keeps track of what is going on in its tank. I have had my female tadpole madtom for three years now. When I got her she was a little over an inch long; now she is approximately 5 inches long. The adipose fin starts far forward on the fish's back and is matched by a long anal fin on the belly. Both of these fins are separated from the caudal fin by a small notch. The dorsal and pectoral fins have thick, sharp spines, and you need to be aware that these spines are venomous and can give a nasty sting. I have never been stung by my fish, but people who have say it is very painful. Madtoms are shy, and seldom appear during the day. They prefer to prowl the tank at night, and will glide gracefully around it searching for food. Madtoms are omnivores, and thus easy to feed. They will eat almost anything that will fit in their mouths. I feed mine Hikari sinking carnivore pellets, brine shrimp pellets, chopped earthworms and glass shrimp, but they will also eat feeder guppies and the occasional tankmate. They can swallow surprisingly large fish! Mine managed to eat a couple of 3-inch shiners. I usually feed my fish in the evening just after I turn out the tank light.

Because they are native fish and used to cool lakes and streams, it is best to keep them in an unheated tank. They become stressed at temperatures in the 80's and may die if the tank reaches over 90ºF. The small size and ease of keeping tadpole madtoms should make them amenable to captive breeding, though to my knowledge no one has yet accomplished this. It could be a challenge for someone interested in breeding catfish. In March of the second year I had them, I thought my pair were going to spawn. The tank temperature had dipped down to the low 60's in January and February and was approaching 70 by mid March. I had been feeding them heavily with live shrimp and guppies as well as pellets. At dusk the male started cleaning a ceramic pipe in the tank. He alternated between cleaning and swimming with the female. The two would swim around the tank with the male slightly behind. He would rub against the female and nudge her belly, and when they got close to the ceramic pipe he would try to get her to enter. Eventually she went in too, and also seemed to be cleaning the pipe. I never saw any eggs, and unfortunately the male died during a heat wave when my air conditioner broke. I have hopes of trying again after my next collecting trip if I'm lucky enough to find more tadpole madtoms. I hope I have sparked a little interest in the keeping and propagation of these reclusive catfish. Their ease of keeping and grace while swimming will quickly make them some of your favorite fish too!

This articled previously appeared in the June, 2021 issue of the North Jersey Aquarium Society's ***Reporter.***

Pictures From Our Last Meeting

Photos by Marsha Radebaugh & Jason Kerner



Joe Ferdenzi with bowl show winners: 1st place John Buzzetti, 2nd place Richie Waizman, and 3rd place Harry Faustmann

Bowl Show Entries

New members Luis Cardenas and girlfreind Joyce

Full House to hear Rusty Wessel

Joe Ferdenzi presents Ray Lopinto and Lenny Ramroop with their door prizes

Some of the evening's auction items!

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Fishy Friends' Photos

by Greater City Aquarium Society Fishy Friends

Below are photo submissions to our "Fishy Friends" Facebook group. I've left the subjects unnamed, but not the photographer. If you see a shot you like, and want more info, ask the photographer about it! I'm sure he or she will be delighted to tell you!

How Smart Are Our Fish?

A series by the Undergravel Reporter

In spite of popular demand to the contrary, this humor and information column continues. As usual, it does NOT necessarily represent the opinions of the Editor, or of the Greater City Aquarium Society.

A new study published in **Applied Animal Behaviour Science** is (once again) challenging our perceptions of the intelligence of fish.

A few years ago, GCAS member Tom Keegan gave a series of lectures about the surprising but underrated intelligence of fish. It has long been said that goldfish have a three-second memory, but that is far from the truth. As Tom explained, humans regularly underestimate the intelligence of fish for a number of reasons, including our own cognitive biases. Fish don't have a face that looks like ours, they don't have facial expressions like we do, and we can't hear them vocalizing. Perhaps the following research can be added to Tom's next presentation.

Researchers working with fish in a Southern California aquarium have been surprised to find evidence they believe demonstrates that sharks and rays are capable of play. Autumn Smith, a biologist at Biola University, approached the Cabrillo Marine Aquarium outside Los Angeles with a request—to add more enrichment for the captive elasmobranchs (rays, skates, and sharks). The staff ordered a swimming pool toy set with hoops, dive balls, and a toy squid. Ms. Smith then got to work observing the animals.

For the first few weeks the sharks and skates avoided the new pool toys, potentially scared at the change in the environment. But once they became accustomed to the toys, the sharks and rays began to bump the objects and swim close to them. The sharks and rays eventually graduated to pushing the toys, smacking them with their tails, and picking them up with their noses to carry them.

The sharks displayed a preference for certain toys and certain colors. One small horn shark, Bud, displayed a partiality for orange toys. Leopard sharks were apparently standouts, displaying by far the most interactions with the toys.

Photo from American Oceans.org

Other researchers, not affiliated with the study, question whether the interactions were truly play, or rather exploration. But whether the interactions were genuine play behavior or mere curiosity, researchers agree that it is evidence of well-developed cognitive abilities. Further research may confirm the need to add enrichment toys to elasmobranch aquariums in order to keep the fish sufficiently stimulated mentally. Researcher Patrick Sun of Biola University said he has already contacted his university's engineering department about producing custom toys specifically for fish enrichment. The Undergravel Reporter will be sure to let the club know when such toys are inevitably available at a fish store near you.

For more information:

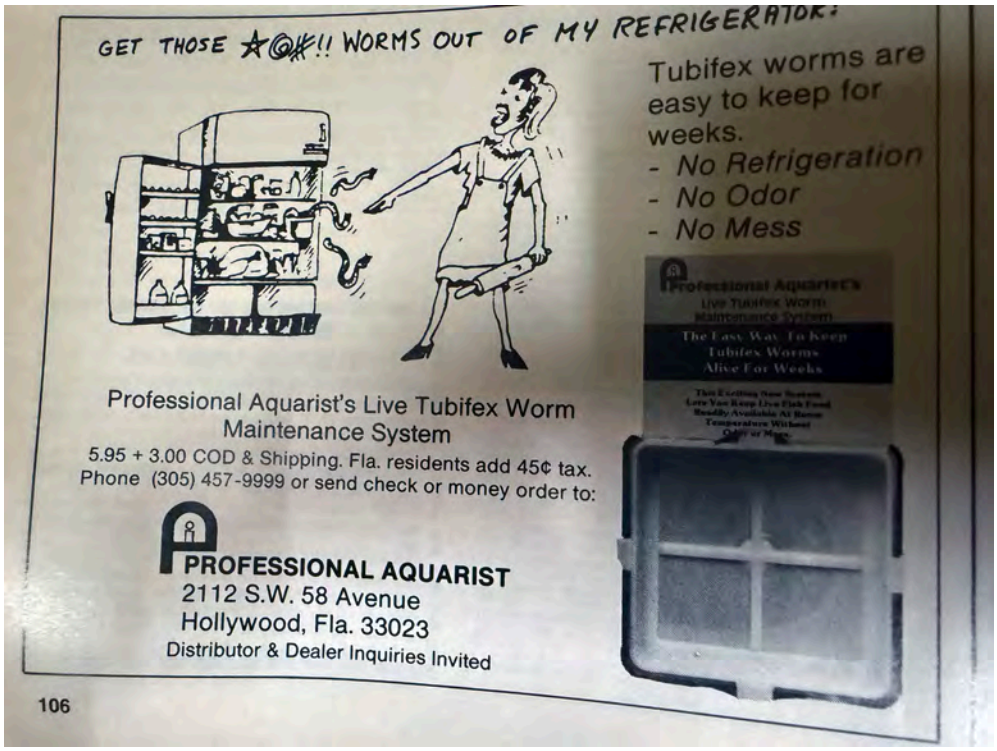
https://www.bing.com/videos/riverview/relatedvideo?q=do+fish+have+emotions+and+intelligence&mid=C9CAE927F2E5CBB37D30C9CAE927F2E5CBB37D30&FORM=VIRE

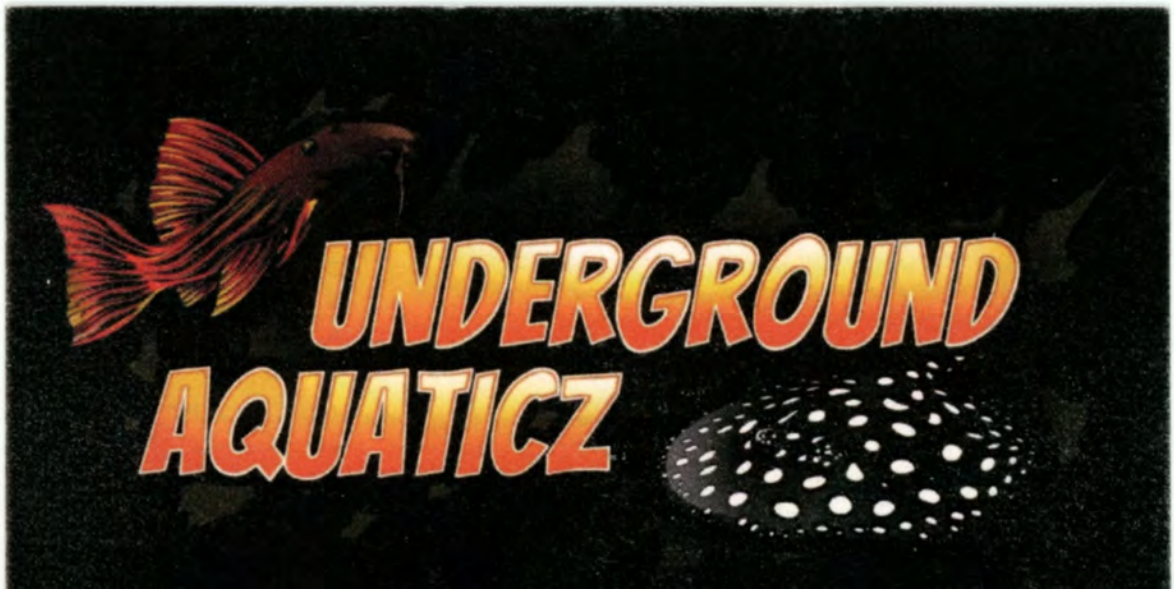
https://www.americanoceans.org/facts/how-smart-are-sharks/

From The Pages of Yesteryear

Freshwater And Marine Aquarium magazine

January 1988

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